



## Lawrence Livermore National Laboratory

November 14, 1997

TO: CVOC Initiative Participants

FROM: Richard C. Ragaini (CVOC Data Collection Manager)

SUBJECT: **Initiative To Improve The CVOC Cleanup Process By Using Historical Case Analysis**

Thank you for participating in this Department of Energy (DOE) sponsored initiative to evaluate the extent and growth behavior of chlorinated volatile organic compound (CVOC) groundwater plumes based on historical case data.

This CVOC initiative is a cooperative partnership between a variety of organizations and agencies. The Western Governors Association working group on Interstate Technology and Regulatory Cooperation (ITRC) is a key partner, and will serve as a link to state regulatory bodies. Through the cooperation of ITRC state representatives, we are collecting information on approximately 10 CVOC contaminant plumes each from approximately 15 states. In addition to the DOE and ITRC, US EPA, US Navy, US Air Force, US Army and industry will also provide CVOC historical case data. An anticipated total number of cases is about 400.

This Initiative will address two key issues related to plume behavior: (1) Can certain aspects of CVOC groundwater plume behavior be predicted in association with certain hydrogeologic settings or release scenarios, and (2) Which factors exert the greatest influence on observed plume behavior within these settings and scenarios?

The results will aid project managers in making cost effective CVOC plume cleanup decisions at a given site. A historical case evaluation that uses a large number of cases can be used by site managers to identify common hydrogeological or CVOC release conditions that can be managed with minimal effort and cost, versus conditions that warrant the large expenditure of money often applied to all CVOC releases. Another potential benefit may be in the form of feedback to CVOC program managers regarding the adequacy of data being collected to evaluate plume behavior and the appropriate application of natural biodegradation and attenuation processes.

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The plume data gathering progresses in several steps:

1. The site representative identifies plumes, and fills out the Plume Screening Check List.
2. After the returned check lists are reviewed by Lawrence Livermore National Laboratory (LLNL), certain sites are selected. The next step is to transfer as much relevant electronic information as possible to the Database. A list of the desired electronic information and suggested data format is attached (Attachments I & II). **Due to resource limitations, we can accept groundwater sample analytical data from each well through time (including CVOCs, general minerals, etc.) in electronic form only.**
3. Additionally, the current copy of the site compliance document that best describes the site conceptual model for each site, e.g., RI/FS, or equivalent characterization documents should be sent to LLNL. This document is used to extract needed information, which is not available electronically.

Accompanying this letter are the CVOC Initiative Charter and the Plume Screening Check List. The Charter contains background information, and lists the members of the Working Task Force and the Peer Review Panel. The Plume Screening Check List should be filled out and mailed to Richard Ragaini at LLNL Mail Stop L-626, Livermore, CA 94550.

The CVOC Initiative database structure will be available to all the participants after the completion of the project. Site data will be distinguished only by a number to preserve site anonymity. If you have any questions, please call or e-mail me at rragaini@llnl.gov and 510-423-8877, or Sunessa Schettler (project database manager) at schettler1@llnl.gov and 510-422-2244.

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### Attachment I

It would be extremely helpful if each site could provide as much electronic environmental information as possible, particularly pertaining to maps of monitoring well locations and chemical sampling and analysis results with time. Attachment II lists the hydrogeologic information desired. **Due to resource limitations, we can accept groundwater sample analytical data from each well through time (including CVOCs, general minerals, etc.) in electronic form only.**

The table below lists the analytes we are most interested in.

CVOCs	Petroleum Products
Carbon tetrachloride	Benzene
Chloroform	Toluene
Chloroethane	Ethylbenzene
Chloromethane	Xylene
1,1-Dichloroethane	PAHs
1,2-Dichloroethane	
Dichloromethane	Others
	Alkalinity
1,1,2,2-Tetrachloroethane	Carbon Dioxide
1,1,1 Trichloroethane	Dissolved Organic Carbon
Vinyl chloride	Dissolved Oxygen
	Ethane/Ethene (ethylene)
1,1-Dichloroethene	Hydrogen (H <sub>2</sub> )
cis-1,2-Dichloroethene	Iron, dissolved or Fe(II)
trans-1,2-Dichloroethene	Methane
Tetrachloroethene	Nitrate/Nitrite
Trichloroethene	Phosphate
	pH
1,4 - Dioxane	Eh
	Sulfate/Sulfite

The preferred formats are MS ACCESS tables or databases, Excel spreadsheets, tab-delimited text files, or other ASCII record and row files. Similarly, we would appreciate any electronic version of site maps in AutoCAD (.DWG or .DXF) or ArcView/ArcINFO (.shp or .e00) formats. The data can be mailed on 3.5 inch PC-compatible disks, ZIP disks, or sent via internet by individual arrangement.

We are also interested in collecting and analyzing data, which does not usually occur in electronic format. To make these data reviews as efficient as possible, we are requesting that each site point-of-contact send a copy of the site RI/FS and or ROD to LLNL.

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## Attachment II

This is a listing of the requested hydrogeologic data (electronic is preferred).

### Site Investigation Data:

- Groundwater sample analytical data from each well through time (including CVOCs, general minerals, etc.) **{electronic form only}**
- Groundwater elevation & depth to groundwater measurements through time
- x, y coordinates for wells
- DNAPL/LNAPL analytical data, if any
- Soil & groundwater test data (porosity, bulk density, moisture, toc)
- Aquifer pumping test results (i.e., transmissivity, conductivity)
- Boring logs, geologic description logs
- Well construction logs (screen depths)

### Maps and Cross Sections:

- Regional site location map
- Site maps showing physical features (topography, roads, sewer lines, drains)
- Site maps showing monitoring well locations, and boring locations
- Site maps showing source locations
- Site maps showing groundwater elevation contours
- Map of nearby wells and surface water bodies
- Isocontour maps of CVOCs in groundwater
- Site maps showing locations groundwater extraction wells
- Geologic maps and cross-sections along and normal to axis of plume core

### Narratives:

- Site Description
- Site Geology
- Release History
- Site Investigations (summary, if available)
- Remediation History

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